CLAIMS

[cl001] 1. A curing light comprising:

a wand adapted to be grasped by a human hand for use in positioning and manipulating the curing light,

a light module,

said light module including a secondary heat sink, said secondary heat sink being configured to assist in heat dissipation,

a primary heat sink affixed to said secondary heat sink,

an array of light emitting semiconductor chips, said semiconductor chips being mounted on said primary heat sink.

[cl002] 2. A curing light as recited in claim 1 further comprising a cover over said major well, said cover serving to protect said semiconductor chips, and said cover permitting light emitted by said semiconductor chips to pass through said cover.

[cl003] 3. A curing light comprising:

a wand adapted to be grasped by a human hand for use in positioning and manipulating the curing light,

a light module,

said light module including a secondary heat sink, said secondary heat sink being configured to assist in heat dissipation,

a primary heat sink affixed to said secondary heat sink,

a plurality of wells located on said primary heat sink,

an array of light emitting semiconductor chips, at least some of said chips being mounted in said wells of said primary heat sink.

[cl004] 4. A curing light as recited in claim 3 further comprising at least one cover serving to cover at least one of said chips.

[cl005] 5. A curing light comprising:

a wand adapted to be grasped by a human hand for use in manipulating the curing light,

a power supply for supplying power to the curing light,

a housing serving to protect the curing light,

an elongate heat sink with a proximal end and a distal end, said elongate heat sink having a longitudinal axis defined between said proximal end and said distal end,

primary heat sink affixed to said elongate heat sink,

an array of light emitting semiconductor chips affixed to said primary heat sink.

[cl006] 6. A curing light as recited in claim 5 further comprising a plurality of primary wells located on said secondary heat sink, at least some of said chips being located in said primary wells.

[cl007] 7. A curing light as recited in claim 6, further comprising a major well on said secondary heat sink, said primary wells being located in said major well.

[cl008] 8. A curing light as recited in claim 5 wherein said chips are mounted by use of a heat conductive adhesive.

[cl009] 9. A curing light as recited in claim 5 wherein said chips are mounted by use of a light reflective adhesive.

[cl010] 10. A curing light as recited in claim 5 wherein said at least one wall of at least one well includes a material selected from the group consisting of Al, Au, Ag, Zn, Cu, Pt, chrome, metal, plating and plastic.

[cl011] 11. A curing light comprising:

a secondary heat sink,

a semiconductor chip module affixed to said secondary heat sink, said semiconductor chip module including

a primary heat sink,

an array of semiconductor chips capable of emitting a light useful for curing composite materials mounted to said primary heat sink, and

a cover that provides protective covering for said semiconductor chips and which permits light emitted by said semiconductor chips to pass through it to provide light useful for curing composite materials.

[cl012] 12. A curing light as recited in claim 11 wherein at least one of said semiconductor chips is selected from the group consisting of light emitting diode chips, laser chips, light emitting diode chip array, diode laser chips, diode laser chip array, surface emitting laser chips, edge emitting laser chips, and VCSEL chips.

[cl013] 13. A curing light comprising:

a wand adapted to be grasped and manipulated by a human hand,

a battery power source located within said wand,

electronic control circuitry located within said wand,

a light module,said light module including an elongate heat sink with a proximal end and a distal end, said proximal end being proximate said wand, said elongate heat sink having a longitudinal axis, and elongate heat sink being adapted to draw heat away from a semiconductor located at said elongate heat sink distal end,

a mounting location located at said elongate heat sink distal end,

an array of semiconductor chip modules located at said mounting location, at least one of said semiconductor chip modules including

a primary heat sink mounted to said elongate heat sink at said mounting location,

a semiconductor chip capable of emitting light useful for curing light activated composite materials mounted to said primary heat sink, and

a cover that provides protective covering for said semiconductor chip and which permits light emitted by said semiconductor chip to pass through it to provide light useful for curing composite materials.

[cl014] 14. A curing light as recited in claim 13 wherein said semiconductor chip is selected from the group consisting of light emitting diode chips, laser chips, light emitting diode chip array, diode laser chips, diode laser chip array, surface emitting laser chips, edge emitting laser chips, and VCSEL chips.

[cl015] 15. A curing light as recited in claim 13 further comprising a switch on said wand for initiating emission of light from said semiconductor chip.

[cl016] 16. A curing light as recited in claim 13 wherein said mounting location is oriented so that when a light emitting semiconductor device is mounted on it, light emitted by the light emitting semiconductor device will be emitted generally orthogonal to said elongate heat sink longitudinal axis.

[cl017] 17. A curing light as recited in claim 13 further comprising a well in said primary heat sink, said chip being located in said well, said well including a reflective wall, said reflective wall including a material selected from the group consisting of Al, Au, Ag, Zn, Cu, Pt, chrome, metal, plating and plastic.

[cl018] 18. A curing light as recited in claim 13 wherein said cover is selected from the group consisting of windows and focus lenses.

[cl019] 19. A curing light comprising:

a wand designed to be grasped by a human hand,

controls for initiating and terminating light transmission by the curing light,

circuitry in electrical connection with said controls,

a power source for powering the curing light,

a light module, said light module including:

a secondary heat sink,

a primary heat sink attached to said secondary heat sink,

an array of light emitting semiconductor devices, at least some of said light emitting semiconductor devices being mounted to said primary heat sink.

[cl020] 20. A curing light as recited in claim 19 wherein at least one of said semiconductor devices is selected from the group consisting of light emitting diode chips, laser chips, light emitting diode chip array, diode laser chips, diode laser chip array, surface emitting laser chips, edge emitting laser chips, and VCSEL chips.